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L&D in the ED: A Game-Based Approach to Learning High-Risk Obstetric Emergencies

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Abstract

Introduction: Teaching emergency medicine residents the principles of obstetric emergencies is a challenging task, as these emergencies are uncommon in general practice and include specific maneuvers for difficult and precipitous deliveries. These requirements are not easy to satisfy in a standard lecture and are labor intensive for small groups. This resource is a board game that leverages near-peer teaching, engages student collaboration, and supports friendly competition. **Methods:** The game was designed to be used by emergency medicine residents and emphasized the evaluation and management of acute issues related to labor and delivery (L&D). To play the game, three to four learners took turns answering questions. Each correct answer was awarded points for forward movement on the game board. The first person to reach the end of the game won. A faculty moderator circulated among the players to clarify questions or answers as needed. **Results:** Our residents loved this resource. They were able to teach each other throughout the game while using reference materials. Participants rated the educational value of the L&D board game as 4.81 (out of 5), as compared to 4.37 for prior lectures covering the same topics. The game was rated similarly to delivery procedural skills workshops implemented in prior years (4.62-4.82). **Discussion:** Game-based exercises are low-tech, highly interactive teaching tools enabling students to learn from each other in a fun and engaging way. Although we did not assess knowledge retention, this activity's educational value was rated similarly to delivery procedural skills sessions.

Keywords

Emergency Medicine, Game, Obstetrics, Labor and Delivery, Precipitous Delivery, Board Game

Appendices

- A. L&D in the ED Game Board .pdf
- B. L&D in the ED Game Pieces .pdf
- C. L&D in the ED Game Questions.doc
- D. L&D in the ED High Yield .docx
- E. Conference Evaluation Form.pdf

All appendices are peer reviewed as integral parts of the Original Publication.

Educational Objectives

By the end of this activity, learners will be able to:

1. Describe the stages and management of normal labor and delivery.
2. Identify and manage the complications associated with labor and delivery.
3. Demonstrate maneuvers for managing complicated deliveries.
4. Recognize situations requiring acute emergency department stabilization and management prior to transfer to an obstetric facility.

Introduction

The ability to evaluate and manage acute obstetric emergencies is a required competency for emergency medicine clinicians.¹ Obstetric emergencies are traditionally taught by a clinical rotation in labor and delivery, supplemented with didactic teaching during weekly conference time throughout residency. While these cases are uncommon, they are high risk, and maneuvers for difficult and precipitous deliveries require practice. The traditional lecture format of conference does not allow learners to practice, and small-group discussions or procedural workshops are resource intensive. To incorporate more active educational exercises without increasing faculty instructor time or overall conference time, we designed an interactive game called L&D in the ED to be played by small groups of learners. We chose to use game-based learning because it is an educational tool that encourages active and collaborative learning, teamwork, low-stakes competition, decision making, problem solving, and knowledge quizzing.² This type of educational experience is preferred by millennial learners³ and has been shown to be as effective as

case discussions and lecture as measured by knowledge retention on postintervention assessments.^{4,5} We created the game to be informational, low tech, and easy to implement.

This is a paper-based board game designed to be used by emergency medicine residents of all levels of training, but it is also ideal for all medical learners with some basic knowledge of obstetrics, such as family medicine residents. Medical students should have some prior exposure to obstetrics, but because each game comes with an answer key, this resource is still helpful for novice learners. Game questions are focused on the emergent evaluation and management of labor and delivery, as well as potential complications. Participants are not only quizzed on their medical knowledge but also must act out specific maneuvers during complicated deliveries and identify situations requiring management and stabilization prior to transfer.

There are four other low-tech educational games on *MedEdPORTAL*, mostly based on card sorting, although none that teaches obstetric emergencies.⁶⁻⁹ Of the 10 currently available curricula related to labor and delivery,¹⁰⁻¹⁹ none utilizes game-based learning. Only one is aimed at emergency medicine providers, but it is a 4-hour small-group discussion and procedure workshop format.¹⁹ Our curriculum covers a similar range of topics in a shorter amount of time and requires fewer instructors because of peer-to-peer teaching.

Methods

We designed this game to be implemented during the weekly emergency medicine resident conference. During a 60-minute time block, our group of 48 emergency medicine residents, four to five medical students, and six to seven emergency medicine faculty participated in the activity. Prior obstetric experience or medical knowledge was not required to play the game, as every question came with its own answer card. However, the game was most useful for learners who had some basic knowledge of obstetrics to maximize the peer-to-peer teaching.

The week before the activity, we printed 10 game boards (Appendix A), one sheet of player pieces with 10 sets of four player pieces for each game (Appendix B), 10 sets of question/answer cards (Appendix C), and 50 summary handouts (Appendix D). Each of these was printed on 8.5×11-inch cardstock. After printing, we affixed the two separate pages of the game board together to make 10 game boards each measuring 17×22 inches, cut up the question/answer cards along the double lines, and cut out each individual player piece.

How to Play the Game

We played this game in a large room (40×40 feet) with mobile tables and chairs and adequate space for the players to move around as needed. We divided the learners into small groups of four players each. Each group consisted of learners of varying levels of training. Each player chose a game piece and placed his/her piece at the Start position on the game board. One player volunteered to go first and picked a question from the deck of questions. He/she read the question to the player to his/her left who then attempted to answer the question. If the player answered correctly, then he/she moved forward the number of spaces specified on the card. If the player answered incorrectly, then the remaining players got a chance to answer, in clockwise order. The first player to answer correctly moved his/her piece forward the corresponding number of spaces. The next player to pick a question card was the person to the left of the person who had asked the last question. If an answer required clarification, any player on the team could look up the information and teach the group or could ask a faculty instructor for help.

An instructor (a senior resident with area expertise in emergency obstetrics) was available during this activity. The instructor had prepared by reading the references used to make the game questions. For implementations elsewhere, depending on group size, two or more instructors may be ideal. Any additional instructors should also be familiar with emergency obstetrics and/or read the references ahead

of precepting a game session. Ideally, all instructors should go through gameplay in advance to be fully prepared for the session.

The instructor circulated around the room to answer questions, demonstrate techniques, and ensure that each group was progressing through the game board without spending too much time on a particular question. After 40 minutes, we reviewed common questions that had come up in the small groups and passed out the summary handout for learners to review at home and use as a clinical reference as needed. All told, the game and review required a total of 1 hour of conference time. At the end of conference, each learner was sent a standard conference evaluation form (Appendix E) with which to complete and evaluate the educational activity. This game has been implemented three times in our residency. In the previous 2 years, the mean educational value was reported using the mean value of all evaluations. In the final year, the mean educational value was reported using the median value of all evaluations.

Results

Forty-eight emergency medicine residents ranging from intern to senior participated in the game playing. Of those participants, 37 completed the standard evaluation survey (77% response rate). On a 5-point Likert scale (1 = *poor*, 5 = *excellent*), the respondents rated the mean educational value of the labor and delivery game as 4.81. The majority of residents (29) ranked the overall educational value as excellent (5 points). Seven residents ranked the overall educational value as very good (4 points), and one resident ranked the overall educational value as good (1 point).

In previous years, we had taught the same material via didactic lecture and additional procedural skills sessions, with educational value rated at 4.74 and 4.82, respectively. Those sessions required the participation of four to six faculty members and 2-3 hours of our dedicated conference time, in comparison to our newly designed board game, which required one faculty member and 1 hour. We also received outstanding comments about how innovative, fun, and educational the session was:

- “This was fantastic—so inventive, really relevant info, great ways to remember important information.”
- “Love the creativity—taking an old boring topic and making it new and interesting.”
- “I liked the practical value and reinforcement of ideas.”
- “It was fantastic to see the group engaged in the game, interacting, and having fun while learning important material.”

The main criticisms of the game-based session were that there was not enough time to finish the game and that some of the maneuvers were difficult to demonstrate without obstetric models.

Discussion

This low-tech, low-resource game was very enthusiastically received by our learners. They appreciated the innovation, the interactive nature of the teaching materials, and the practical nature of the session. Overall educational value was rated as commensurate with more resource-intensive previous educational sessions teaching similar material. We were able to achieve excellent conference scores while using significantly fewer resources with respect to faculty time and conference time.

Although originally designed for emergency medicine residents, this game could easily be used to educate medical students, obstetrics and gynecology interns, and other medical learners who have been previously exposed to obstetrics. The use of near-peer learning and availability of reference materials ensure that regardless of learners’ initial knowledge of content matter, they will be able to learn from the session. Furthermore, the format of our board game can easily be modified for any specialty and fact-based module using different questions and board game illustrations. We have, in fact, run a similar module for our psychiatry educational block and received outstanding reviews.

There are several limitations to this resource. First, near-peer teaching requires learners to be actively involved in teaching each other and demonstrating maneuvers accurately. In a group of disinterested or very junior learners, this may be especially challenging. Potential solutions include incorporating more circulating faculty, making sure each group has learners with different levels of training, and equipping junior learners with printed copies of the high-yield reference handout to use as a cheat sheet if needed.

Second, some groups were not able to finish the game in the time allotted, thus missing the opportunity to cover all the material. However, learners may still review the high-yield reference handout independently to solidify their knowledge.

Additionally, delivery maneuvers may be difficult to demonstrate without a task trainer or other model, none of which were available during our initial trial of the game. In subsequent iterations, we have offered labor and delivery manikins for use and found that learners for the most part preferred ad hoc simulation, using available props to simulate delivery maneuvers instead of moving to the manikin. Depending on learner profile, we would recommend having delivery task trainers available so that the players can use the model to demonstrate or can practice the specific maneuvers as desired.

Finally, we were only able to assess learner satisfaction with and self-reported educational value of the game, but not knowledge or skill retention. We also did not evaluate whether our residents would be able to apply their knowledge at the bedside.

In summary, we found our low-tech L&D in the ED game to be a very successful teaching tool. Our learners enjoyed the interactive nature and friendly competition of the game. We were able to cover a wide breadth of information in a short period of time, without increasing faculty time. The game was most useful for learners with some basic obstetrics knowledge and was most easily played in a space with mobile desks and chairs, with delivery task trainers available for simulation. The amount of time required to play the game can be adjusted based on learner needs. Further research is needed to demonstrate knowledge and skill retention.

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Ethical Approval

Reported as not applicable.

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